



SBIR N03-112



# ***Modeling and Simulation of Cultural Differences in Human Decision Making***

## ***Phase II Year 2: Focus on Transition***

**CKM Meeting**  
**January 2006**

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a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

# ***Multicultural Considerations in Work Processes***



In both military and business environments, multinational teams have become the norm.

- Research has shown consistent differences in the ways that people from diverse cultures approach and complete tasks.
- Task performance and work process efficiency will be highest when the assignment of human resources is based on relevant attributes of the personnel.

A decision support and planning aid focused on multinational teams has been developed to facilitate the design of multicultural processes.

# ***Integrative Decision Space Analytical System***



## **❖ I-DecS AnSys**

Models a work process as a series of tasks. Attributes of the tasks, personnel and organization are modeled, including cultural parameters.

Simulates the modeled work process and returns performance projections of a multinational team compared to a nationally homogeneous team.

Can be used during planning to perform a cultural fit assessment in order to identify strengths and weaknesses of the proposed team.



[User Guide](#)

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- Users should avoid the use of the browser's BACK, FORWARD, and RELOAD buttons as they could cause unexpected results.
- This system is a prototype for authorized use only. Your actions and data generated with this system may be subject to collection and analysis by system developers.

## Select Record



[Home](#) [Help](#)



Step	1	2	3	4	5
	Select Record	Properties	Task Selection	Worksheet	Display Analysis

[Cultural Info](#) [Logout](#)

## Select Record

Select one or more fields to search:

\*\* Mission Type \*\*

\*\*\* Mission Theater \*\*\*

\*\* CJTF Nationality \*\*

\*\*\*\* CJTF Service \*\*\*\*

Search

My Records

Search Results

	Record Name	Date	Mission Type	Mission Theater	CJTF Nationality	CJTF Service
Select	Helo Raid	8-24-2005	Other...	PACOM	United States	Navy
Select	EMIO	8-25-2005	Other...	PACOM	United States	Navy
Select	Oil Spill	8-24-2005	Other...	PACOM	United States	Navy
Select	White Ship	8-24-2005	Other...	PACOM	United States	Navy

Create New

Copy (Save As)

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Delete

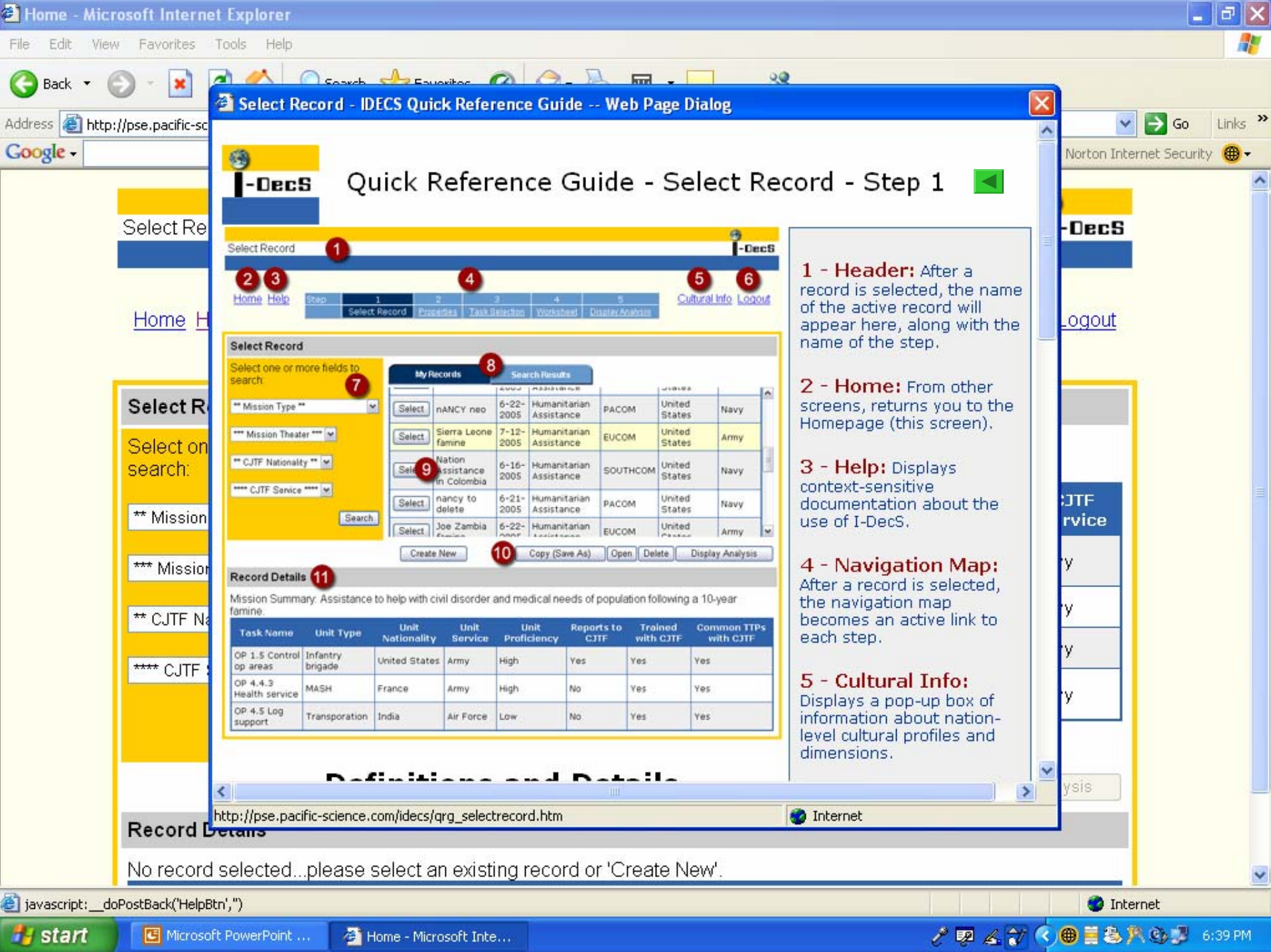
Display Analysis

## Record Details

No record selected...please select an existing record or 'Create New'.

Task Name	Unit Type	Unit Nationality	Unit Service	Unit Proficiency	Reports to CJTF	Trained with CJTF	Common TTPs with CJTF
-----------	-----------	------------------	--------------	------------------	-----------------	-------------------	-----------------------





## Select Record - IDECS Quick Reference Guide -- Web Page Dialog



### Quick Reference Guide - Select Record - Step 1

Select Record

2 Home 3 Help

1 Step

2 Select Record

3 Properties

4 Task Selection

5 Worksheet

6 Display Analysis

5 Cultural Info

6 Logout

#### Select Record

Select one or more fields to search:

\*\* Mission Type \*\*

\*\*\* Mission Theater \*\*\*

\*\* CJTF Nationality \*\*

\*\*\* CJTF Service \*\*\*

Search

#### My Records

Select

NANCY neo

6-22-2005

Humanitarian Assistance

PACOM

United States

Navy

Select

Sierra Leone famine

7-12-2005

Humanitarian Assistance

EUCOM

United States

Army

Select

Nation Assistance in Colombia

6-16-2005

Humanitarian Assistance

SOUTHCOM

United States

Navy

Select

nancy to delete

6-21-2005

Humanitarian Assistance

PACOM

United States

Navy

Select

Joe Zambia

6-22-2005

Humanitarian Assistance

EUCOM

United States

Army

Create New

Copy (Save As)

Open

Delete

Display Analysis

#### Record Details

Mission Summary: Assistance to help with civil disorder and medical needs of population following a 10-year famine.

Task Name	Unit Type	Unit Nationality	Unit Service	Unit Proficiency	Reports to CJTF	Trained with CJTF	Common TTPs with CJTF
OP 1.5 Control op areas	Infantry brigade	United States	Army	High	Yes	Yes	Yes
OP 4.4.3 Health service	MASH	France	Army	High	No	Yes	Yes
OP 4.5 Log support	Transportation	India	Air Force	Low	No	Yes	Yes

http://pse.pacific-science.com/idecs/qrg\_selectrecord.htm

**1 - Header:** After a record is selected, the name of the active record will appear here, along with the name of the step.

**2 - Home:** From other screens, returns you to the Homepage (this screen).

**3 - Help:** Displays context-sensitive documentation about the use of I-DecS.

**4 - Navigation Map:** After a record is selected, the navigation map becomes an active link to each step.

**5 - Cultural Info:** Displays a pop-up box of information about nation-level cultural profiles and dimensions.

#### Record Details

No record selected...please select an existing record or 'Create New'.

javascript: \_\_doPostBack('HelpBtn','')

start Microsoft PowerPoint ... Home - Microsoft Inte...

Internet

6:39 PM

## Properties - Helo Raid

[Home](#) [Help](#)

Step	1	2	3	4	5
	Select Record	Properties	Task Selection	Worksheet	Display Analysis

[Cultural Info](#) [Logout](#)**Mission Information**

Mission Type

Mission Theater

Mission Country

CJTF Nationality

CJTF Service

**Properties**

Point of Contact

Email Address

 (e.g., smith@zmax.com)

Keywords

  
Enter keywords separated by spaces. Keywords can be used to search for this file.

Summary

  
Enter summary information to identify the situation and mission synopsis.



## Task Selection - Helo Raid

[Home](#) [Help](#)

Step	1	2	3	4	5
	Select Record	Properties	Task Selection	Worksheet	Display Analysis

[Cultural Info](#) [Logout](#)

## Task Selection

Select one of the fields to search.

- C4 [5]
- UJTL Category--
- Maneuver [1]
- Intelligence [2]
- Forces (Firepower) [3]
- Sustainment (Logistics) [4]
- C4 [5]
- Force Protection [6]
- Alliances and Relations [8]
- Counterproliferation [9,7]
- Industrial Tasks

## Task List

ST 5.0 Theater Strat C4  
ST 5.1 Op/manage C4  
ST 5.2 Assess environment  
ST 5.3 Determine direction  
ST 5.4 Provide direction  
ST 5.5 Theater-wide IO  
ST 5.6 Public affairs  
OP 5.0 Provide Op C2  
OP 5.1 Comm op/level info  
OP 5.1.1 Comm op info  
OP 5.1.2 Means of comm  
OP 5.1.3 Determine CCIRs  
OP 5.1.4 Maintain op info  
OP 5.1.5 Monitor situation  
OP 5.1.6 Preserve docs  
OP 5.1.7 Combat cameras

Copy

Copy All

## Selected Tasks

OP 5.1.1 Comm op info  
OP 2.1 Direct op intel  
OP 5.3 Prepare orders  
OP 5.4 Command forces  
OP 5.3 Prepare orders  
OP 5.1.8 Execute C4 TTPs  
OP 5.1 Comm op/level info  
OP 5.3 Prepare orders  
OP 5.4 Command forces  
OP 3.2 Attack op targets  
OP 2.2 Collect op info  
OP 2.6 Evaluate intel  
OP 2.2.5 Get target info  
OP 2.5 Disseminate intel  
OP 2.6 Evaluate intel  
OP 5.0 Provide Op C2

Move Up

Move Down

Remove

## Task Description

## OP 5.0 PROVIDE OPERATIONAL COMMAND AND CONTROL (C2)

To exercise authority and direction by a joint force commander over assigned and attached joint and multinational forces in the accomplishment of the mission. Provides operational guidance, direction, and vision to assigned forces. Follows the theater strategy and links operational and tactical end states. Joint force commanders employ assigned single service, joint and multinational forces to accomplish assigned missions. When directed, a joint force commander will standup a joint task force to plan, direct, and coordinate operations. Joint force commanders may develop and execute policies, plans, and programs. They

[Back](#) [Next](#)

[Home](#) [Help](#)

Step	1	2	3	4	5
	<a href="#">Select Record</a>	<a href="#">Properties</a>	<a href="#">Task Selection</a>	<a href="#">Worksheet</a>	<a href="#">Display Analysis</a>

[Cultural Info](#) [Logout](#)**Mission Tasks**

Select	OP	ESG	Unit	Service	Priority	Yes	Yes	Yes
<input type="button" value="Select"/>	OP 5.4 Command forces	1.17 ESG	United States	Navy	High	Yes	Yes	Yes
<input type="button" value="Select"/>	OP 3.2 Attack op targets	1.18 MEU	United States	Navy	High	Yes	Yes	Yes
<input type="button" value="Select"/>	OP 2.2 Collect op info	1.19 A/C	United States	Navy	High	Yes	Yes	Yes
<input type="button" value="Select"/>	OP 2.6 Evaluate intel	1.20 CJTF	United States	Navy	High	Yes	Yes	Yes
<input type="button" value="Select"/>	OP 2.2.5 Get target info	1.3 ISR Source	New Zealand	Navy	High	Yes	Yes	Yes

**Task Editing****OP 2.2.5 COLLECT TARGET INFORMATION**

Unit Type

Unit Nationality

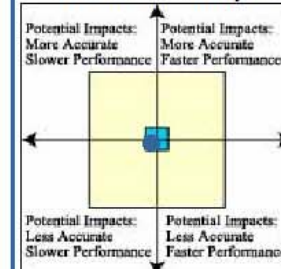
Unit Service

Unit Proficiency

Reports to CJTF

Trained with CJTF

Common TTPs w/ CJTF

**Preview of Analysis**




 Address <http://pse.pacific-science.com/idecs/Workbook.aspx?usr=TW05&Filename=Helo%20Raid>

Go Links

Google Search New! 0 blocked AutoFill Options

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## Impacts -- Web Page Dialog

 Compatibility of Ways of Doing Business -  
Based on Nationality of Australia vs. USA Baseline

Description of Characteristic	Similar	Different
Level of <i>supervision</i> customarily provide to workers.	✓	
Amount of <i>delegation</i> customarily employed.	✓	
Type of <i>communication patterns</i> customarily used.	✓	
Rigidity with which <i>business rules</i> are typically followed. * Please note: Non-US workers may be accustomed to working more closely 'by the book.'		✓
Level of tolerance for <i>uncertainty</i> that may be encountered. * Please note: Non-US workers may be more likely to seek additional information in uncertain situations, especially from experts or authority figures.		✓
Amount of <i>decisiveness</i> in decision-making that is typically found.	✓	
Amount of <i>group decision-making</i> that is common among peers.	✓	

<http://pse.pacific-science.com/idecs/Impacts.aspx?CountryName=Australia>

Internet

Task Edit

OP 2.2.5

Unit Type

1.3 ISR Sou

Unit Proficiency

High

Reports to  
CJTF

Yes

Trained with  
CJTF

Yes

Common  
TTPs w/ CJTF

Yes

Update



## Culture Compare -- Web Page Dialog

National Culture information for: Australia

National cultures have been profiled by 4 dimensions. Note that 'High' and 'Low' are descriptive categories only, and neither category is "better".

How Australia scores ..... LOW		
Power Distance (PD)	What HIGH means	People from HIGH nations tend to be accustomed to the concept of different classes and ranks. Power is a basic fact of society, and privilege to those in power is granted as a matter of course. Authority is centralized, and those in authority are expected to be directive.
	What LOW means	People from LOW nations tend to support the concept of equality. They tend to shun the concept of privilege unless it's "earned." Authority is decentralized, and directiveness is often equated with paternalism.
How Australia scores ..... HIGH		
Uncertainty Avoidance (UA)	What HIGH means	People from HIGH nations have usually developed many rules and procedures that are expected to be followed; these can be viewed as society's attempt to lessen the uncertainty of situations by providing structure. There may be high value placed on security, and high priority placed on dispelling conflict within an organization. There may be intolerance of deviant ideas and behavior.
	What LOW means	People of LOW nations tend to place a high value on individual decisions, even in risky situations. There may be higher tolerance for deviant ideas and behavior. There may be acceptance, and even admiration, for challenges to "the system."

Mission T

Select

Select

Select

Task Edit

OP 2.2.5

http://pse.pacific-science.com/idecs/CultureCompare.aspx

Internet

Unit Type

Unit Nationality

Unit Service

Preview of Analysis



## Culture Compare -- Web Page Dialog

	means	prestige within an in-group is important, and one's successes or failures reflect upon the entire group.
Masculinity (M)	How Australia scores ..... HIGH	
	What HIGH means	People of high M nations tend to view work as central to life. Work is given a high priority when scheduling time and activities, and even social activities may revolve around work. "Working overtime" is often expected. There may be higher job stress.
	What LOW means	People of low M nations tend to view work as less central to life; e.g., "work to live" vs. "live to work." Machismo is not highly regarded. Interdependence (vs. independence) may be seen as the ideal.

## Other nations with profiles similar to..... Australia

- United States - Canada - Ireland - New Zealand - United Kingdom -

## Compare country profiles:

Countries to compare:	Australia	vs.	New Zealand
Power Distance (PD)	LOW		LOW
Uncertainty Avoidance (UA)	HIGH		LOW
Individualism (I)	HIGH		HIGH
Masculinity (M)	HIGH		HIGH

Mission T

Select

Select

Select

Task Edit

OP 2.2.5

http://pse.pacific-science.com/idecs/CultureCompare.aspx

Internet

analysis

Unit Type

Unit Nationality

Unit Service

Preview of Analysis



**GraphOutput -- Web Page Dialog**

Record name: Helo Raid

Print

Potential Impacts:  
More Accurate  
Slower Performance

Potential Impacts:  
More Accurate  
Faster Performance

Potential Impacts:  
Less Accurate  
Slower Performance

Potential Impacts:  
Less Accurate  
Faster Performance

The projected impact on mission performance of the current force composition compared to an all-US baseline is shown below:

Accuracy	<span style="color: blue;">●</span> No Change
Speed of Performance	<span style="color: red;">●</span> Decrease

Potential impact of assigned forces compared to baseline forces:

Legend:

● No Change ● Increase ● Decrease

Task Name	Unit Type	Unit Nationality	Unit Service
OP 5.1.1 Comm op info	1.1 CFMCC-CMD	United States	Navy
OP 2.1 Direct op intel	1.2 CFACC	United States	Navy
OP 5.3 Prepare orders	1.11 CFMCC-Plans	United States	Navy
OP 5.4 Command forces	1.12 CFMCC-CMD	United States	Navy
OP 5.3 Prepare orders	1.13 CFMCC-FOPS	United States	Navy
OP 5.1.8 Execute C4 TTPs	1.14 ESG	United States	Navy

http://pse.pacific-science.com/idecs/GraphOutput.aspx?usr=TW05&record=Helo Raid

Internet

Mission T

Select

Select

Select

Task Edit

OP 2.2.5

DecS

Logout

analysis

Preview of Analysis

## ***Phase III: Transition Plan – A Multi-Tiered Approach***



### **Tier One: PSE Usability Testing**

Implementation Validation and Interface Usability

- ✓ PSE Staff and SMEs (27-30 June 05)
- ✓ Version 1.0, Released 30 June 2005

### **Tier Two: Local Military Demonstration**

Presentation of Tool in Military Environment

- ✓ 3<sup>rd</sup> Fleet (29 Apr 05)
- ✓ USS Tarawa (17-22 July 05)

### **Tier Three: NAVAIR and NPS Laboratories**

Assessment of use in Naval Laboratories

- ✓ NAVAIR: NEO Scenario (19-22 Dec 05)
- NPS: TNT Scenario (February 2006)

## ***Phase III: Transition Plan – A Multi-Tiered Approach Continued***



### **Tier Four: Fleet Experiments**

#### **Demonstrate Tool and Collect Data**

- ✓ TW05 (2<sup>nd</sup> Fleet) – Pre Experimental Modeling
- TW06 (3<sup>rd</sup> Fleet) – Tactical Situation Planning

### **Tier Five: Customer Contacts**

#### **Potential Sponsors**

- Boeing – SoSCOE CFMCC Planning Tool
- MPAT – Coalition Military Operations

### **Tier Six: Forum**

#### **Networking**

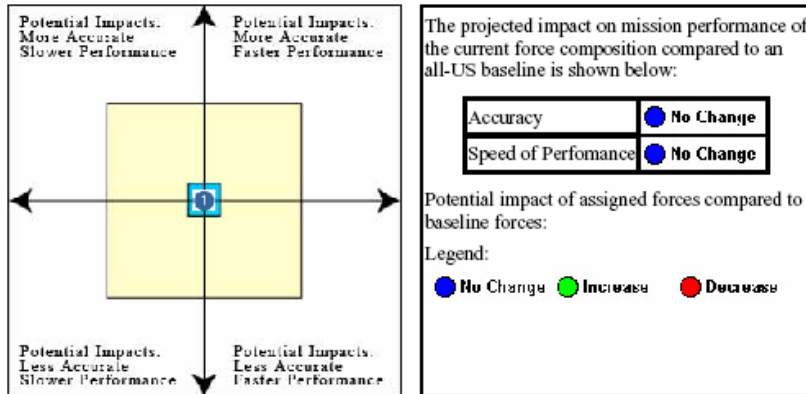
- Navy Transition Assistance Program

## ***Tier Three: NAVAIR Laboratory***



- Comparison of Mission Planning with/without I-DecS
- Experiment Conditions
  - CKM NEO Scenario
  - 5 Teams with I-DecS and 5 Teams with Pencil & Paper
- Changes to Scenario
  - Added Multi-national Resources
    - Thai SEALs and Australian Army Special Forces
  - Specified Command Arrangements and Training
- Changes to I-DecS Tool:
  - Added task list in lay terms that reflects all identified options from the scenario.
  - Added user fields for specification of Transportation, Weapons, and Critical Times.

# I-DecS Report vs. Handwritten Solution Cards



## CRITICAL TIMES

Onset 1800 Contact 2045 Evacuation 2100 Return 2345

Task Name	Unit Type	Unit Nationality	Unit Service	Transportation	Weapons
O 1.1 Depart from USS Enterprise	N/A	United States	Marine Corps	CH-53 helicopter	None
O 1.3 Drop personnel into sea	N/A	United States	Marine Corps	CH-53 helicopter	None
O 1.9 Travel from sea to shore	SEALs	United States	Navy	Zodiak inflatable boat	M-16s
O 1.13 Travel from shore to church	SEALs	United States	Navy	None	M-16s
C 2.3 Administer insulin in transit	SEALs	United States	Navy	None	M-16s
C 2.4 Stabilize broken leg in transit	SEALs	United States	Navy	None	M-16s
E 3.1 Travel from church to shore	SEALs	United States	Navy	None	M-16s
E 3.17 Travel from shore to sea	SEALs	United States	Navy	Zodiak inflatable boat	M-16s
E 3.22 Airlift personnel from sea	N/A	United States	Marine Corps	CH-53 helicopter	None
R 4.1 Travel from sea to USS Enterprise	N/A	United States	Marine Corps	CH-53 helicopter	None

DETAILED PLAN PERSONNEL TRANSPORTATION WEAPONS

VS.

Final Plan		
PERSONNEL	TRANSPORTATION	WEAPONS
Navy SEAL Team <del>CH-53 (Marine Helicopter)</del>	✓ CH-53 (Marine Helicopter) UH-60 Blackhawk Donkeys ✓ Zodiac ✓ USS Enterprise ✓ C-130 Hercules	SEAL Team's plc equipment
CRITICAL TIMES	DETAILED PLAN	ADDITIONAL COMMENTS
1. Onset: 3:30 AM CH-53 <del>departs</del> ✓ USS Enterprise w/ Navy SEAL Team	Contact village to provide translation CH-53 departs <del>USS Enterprise</del> w/ SEAL Team. Arrives <del>at 15</del> 15 miles off shore and drops Zodiac + SEALs. Get to coral at 6 AM, wait until 7 AM to cross (high tide). Arrive at shore 7:00 AM. Move undetected to church; arrive at 7:49 AM. Treat and extract workers at 8:30 AM. Go to village and meet donkeys (SEALs) are carrying broken legged worker. Meet donkeys and load up workers; pack. South to blackhawk extraction point. Leave in blackhawk and arrive at navy base 1:15-1:30 PM.	← 6:00 AM Blackhawk left Army base to land at extraction zone. 20 miles South of church.
2. Contact: 7:49 AM SEALs make contact with workers		
3. Evacuation: 8:30 AM depart		
4. Return to Base or Ship: 1:15-1:30 PM		



# NAVAIR Hypotheses and Results –Supported



H2: The teams that use I-DecS will indicate a lower workload than the teams without I-DecS.

*Measure:* NASA TLX – Mental Demand and Effort

	With I-DecS	Without I-DecS	t value	Significant
Mental Demand	7.7	8.7	-1.979	Yes
Effort	7.3	8.2	-1.307	Yes

H5: The teams that use I-DecS will be more efficient than the teams not using I-DecS.

*Measure:* NASA TLX – Temporal Demand and Participant Comments

	With I-DecS	Without I-DecS	t value	Significant
Temporal Demand*	7.4	8.3	-1.344	Yes
Comments	1/5 Teams	3/5 Teams		

\*Teams that felt temporal constraints.

# NAVAIR Hypotheses and Results – Not Supported



H3: The teams that use I-DecS will indicate a higher confidence level in the plan than the teams without I-DecS.

*Measure:* Post Experiment Survey Question

H4: The teams that use I-DecS will indicate a higher satisfaction level in the plan development process than the teams without I-DecS.

*Measure:* Post Experiment Survey Question

	With I-DecS	Without I-DecS	t value	Significant
Q1 - Confidence	3.5	3.7	-0.443	No
Q2 - Satisfaction	3.3	3.5	-0.603	No

## ***Tier Three: NPS Laboratory***



- Mission Planning – Focus on Interoperability
- Experimental Conditions
  - TNT (Tactical Network Topology) Scenario
  - 3 to 4 Teams of Naval Officers
- Scenario
  - Coast Guard Maritime Interdiction – Precursor to TW06
  - Focus on Assigning Collaborators and Technology
- Changes to I-DecS Tool
  - Changed from UJTL to UNTL
  - Added user fields for specification of Collaboration Partners and Equipment/Networks
  - Added “Role” and “ROE” matrices – Suggestions from TW05
  - Performance measures of Synergy and Interoperability

# NPS Sample Solution



TASK	UNIT	NATIONALITY	AGENCY	CONNECTIVITY	COLLABORATOR	NETWORK
NTA 2.4.1 Evaluate Information	USCG HQ	US	USCG	N/A		
ST 8.1 Foster Alliance and Regional Relations and Security Agreements	USCG HQ	US	USCG	NO	Country Purple	
NTA 5.1.1.1.2.1 Receive and Transmit Force Orders	USCG HQ	US	USCG	YES	GEM STATE (Motor Vessel)	Portable OFDM link to TNT test-bed
NTA 1.1.2 Move Forces	GEM STATE	US	USCG	N/A		
NTA 1.4.6.1 Conduct Visit	GEM STATE	US	USCG	N/A	ADMIRAL CALLAHAN (Target)	
NTA 5.1.2 Manage Means of Communication	GEM STATE	US	USCG	YES	NPS NOC (Network Operation Center)	Interface and Data Transport to OFDM from boarding team
NTA 2.3.1 Conduct Technical Processing and Exploitation	GEM STATE	US	USCG	YES	LLNL (Lawrence Livermore National Lab)	Portable radiation detection system for data and transfer
NTA 2.4.3 Interpret Information	LLNL	US	LAB	YES	GEM STATE (Motor Vessel)	VPN reach back to TNT collaborative partners
NTA 2.3.1 Conduct Technical Processing and Exploitation	GEM STATE	US	USCG	YES	NBFC (National Biometrics Fusion Center)	Electronic Biometrics gathering and uplink
NTA 2.4.3 Interpret Information	NBFC	US	DOD AGENCY	YES	GEM STATE (Motor Vessel)	VPN reach back to TNT collaborative partners
NTA 2.2.2 Collect Tactical Intelligence on Situation	GEM STATE	US	USCG	YES	DTRA - Defense Threat Reduction Agency	Portable OFDM link to TNT test-bed
NTA 1.4.6.4 Escort Detained Vessel	GEM STATE	US	USCG	N/A	ADMIRAL CALLAHAN (Target)	
OP 5.1.1 Communicate Operational Info	GEM STATE	US	USCG	YES	USCG HQ, Alameda	Portable OFDM link to TNT test-bed

## ***Tier Four: Trident Warrior Exercises***



### **Trident Warrior 2005**

- ✓ Pre-experimental Modeling with I-DecS
- ✓ Assessing Methods to Validate TacSits

### **Trident Warrior 2006**

- Coastal Zone EMIO with Biometric Reachback Network
- Provide to 3<sup>rd</sup> Fleet for Experimental Planning
- “Integration of enhanced coalition interoperability technologies and doctrine into CENTRIXS.”
- Cultural and Interoperability Component

### **FORCEnet Engineering Conference (June 2006)**

- Joint and Coalition Issues in FORCEnet
- I-DecS Contribution to Operational Planning

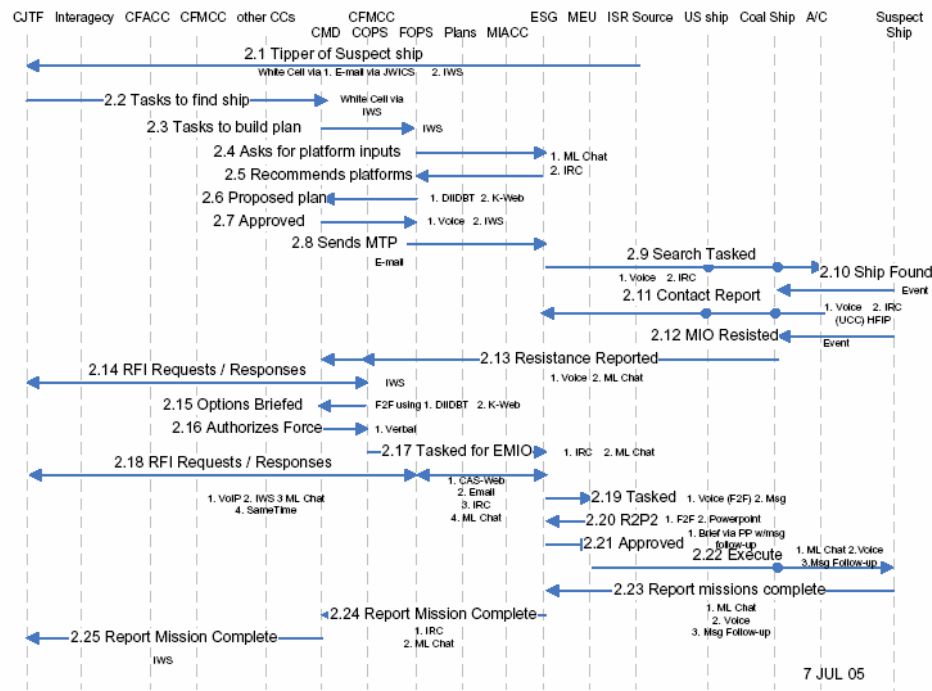


# Trident Warrior 05 Pre-experimental Modeling

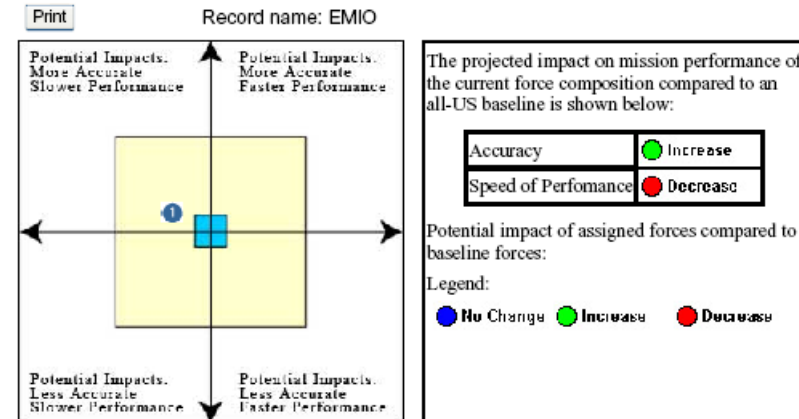


- The four mission threads for TW05 IM have been created in I-DecS.
- I-DecS is a useful pre-experimental modeling tool that shows the impact of different coalition arrangements.

IM Flow 2 - EMIO of Suspect ship



7 JUL 05




Task Name	Unit Type	Unit Nationality	Unit Service
OP 2.6 Evaluate intel	2.1 ISR Source	New Zealand	Navy
OP 5.0 Provide Op C2	2.2 CJTF	United States	Navy
OP 5.4 Command forces	2.3 CFMCC-CMD	United States	Navy
OP 5.1.1 Comm op info	2.4 CFMCC-FOPS	United States	Navy
OP 5.1.1 Comm op info	2.5 ESG	United States	Navy
OP 5.3 Prepare orders	2.6 CFMCC-FOPS	United States	Navy
OP 5.4 Command forces	2.7 CFMCC-CMD	United States	Navy
OP 5.3 Prepare orders	2.8 CFMCC-FOPS	United States	Navy
OP 5.1.8 Execute C4 TTPs	2.9 ESG	United States	Navy
OP 2.2.2 Support ISR	2.10 Coalition Ship	Australia	Navy
OP 2.4 Intel/reports	2.11 A/C	United States	Navy
OP 1.5 Control op areas	2.12 Coalition Ship	Australia	Navy
OP 5.1.1 Comm op info	2.13 Coalition Ship	Australia	Navy
OP 5.1 Comm op/level info	2.14 CJTF	United States	Navy
OP 5.3 Prepare orders	2.15 CFMCC-COPS	United States	Navy
OP 5.4 Command forces	2.16 CFMCC-CMD	United States	Navy
OP 5.1.8 Execute C4 TTPs	2.17 CFMCC-COPS	United States	Navy
OP 5.1 Comm op/level info	2.18 CJTF	United States	Navy
OP 5.1.8 Execute C4 TTPs	2.19 ESG	United States	Navy
OP 5.3 Prepare orders	2.20 MEU	United States	Navy


## ***Tier Five: Potential Customers***



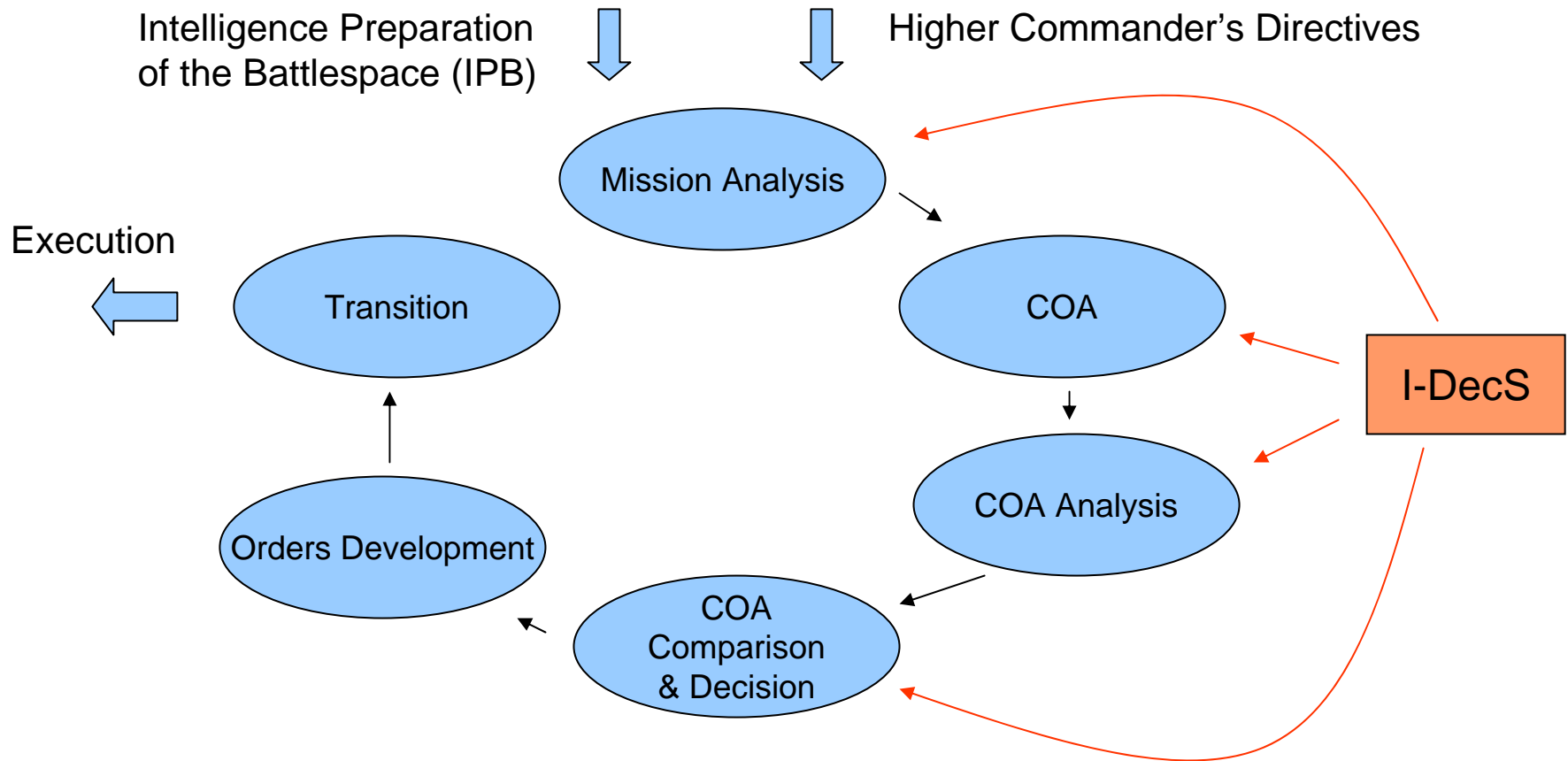
### **Boeing**

- Currently building SoSCOE operational planning tool
  - System of Systems Collaborative Operating Environment.
  - Provides the Combined Forces Maritime Component Commander (CFMCC) a tool to assist in operational planning and mission execution.
- I-DecS has been fit into the CFMCC planning process.
- Interacted with Boeing during TW05/TW06. 

### **MPAT (Multinational Planning Augmentation Team)**

- Source of initial user requirements and user workflow.
- Proposing I-DecS to support Tempest Express.
- Good relationship with PACOM and MPAT. 

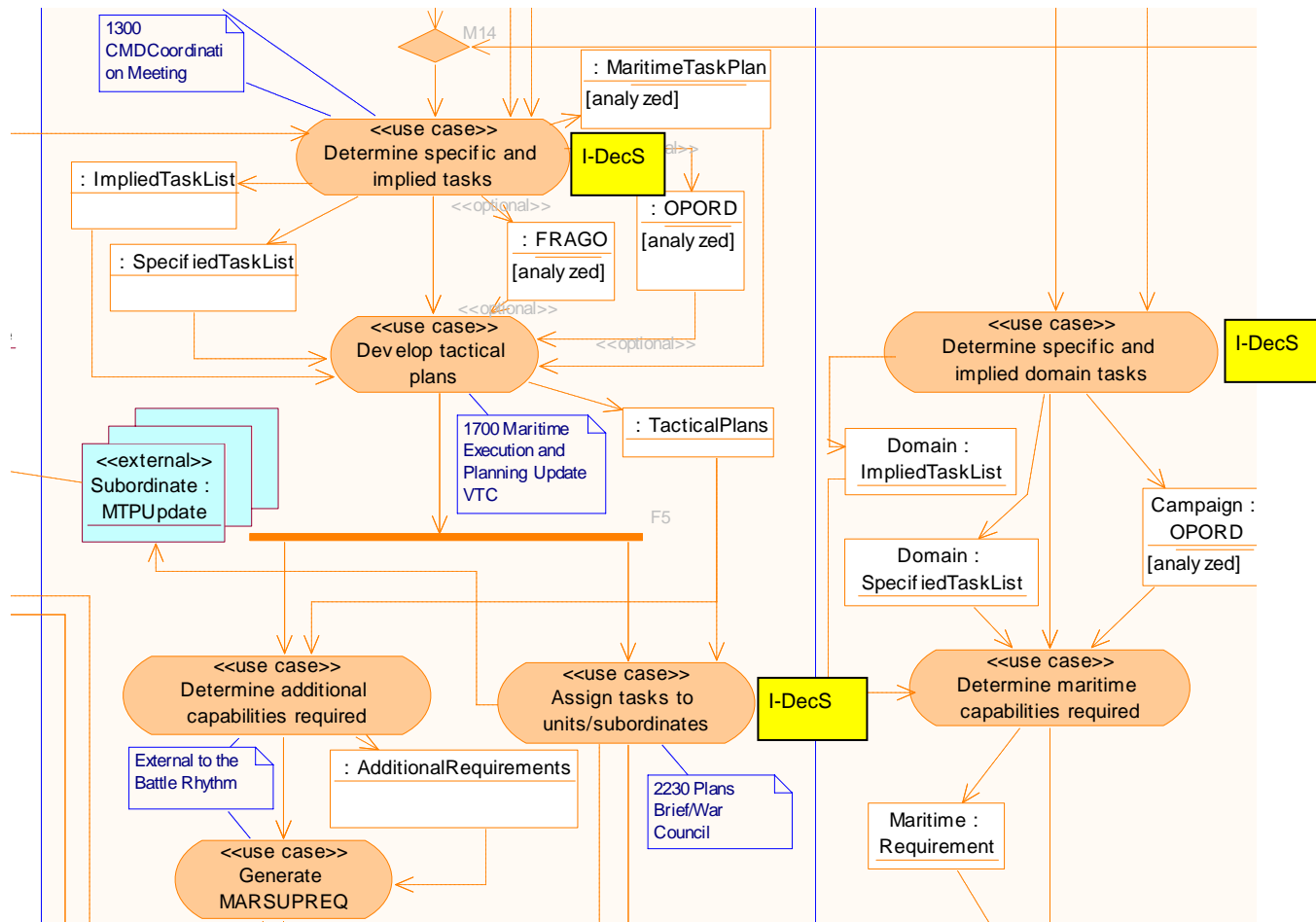
# CFMCC Planning Process\*



CFMCC Combined Forces Maritime Component Commander

\*Based on "Navy Warfare Development Command TACMEMO 3-23-03, Joint Force Maritime Component Commander (JFMCC) Planning and Execution, Appendix A: JFMCC Planning Process."

# SoSCOE and I-DecS





### **MPAT Objectives**

Increase speed of initial crisis response by a CTF in the Asia-Pacific region.

Improve overall Multinational Task Force Headquarters mission effectiveness.

Improve the interoperability of coalition or combined forces.



### **I-DecS Capabilities**

Quickly and easily build mission plans comprised of military tasks.

Model and simulate the performance of the plans as staffed with multi-service and/or multi-national units.

Choose the optimum force composition for the mission.



## ***Tier Six: Navy TAP Program***



- ✓ Application for June Forum (December 2005)
  - Quad Chart
  - Narrative Briefing
  
- Advanced Transition Workshop (February 2006)
  
- Presentation Workshop and Forum (June 2006)
  - “At the Navy *Opportunity Forum*, you can efficiently preview some of the Navy’s best technologies developed with SBIR/STTR funding and evaluate premiere small businesses as potential partners.”

**NEED & CUSTOMER REQUIREMENT**

**Need:** Missions often include units with a wide range of capabilities. Current models for mission planning do not take into account differences in national and organizational culture that may affect mission performance.

**Operational Gap:** Culture is becoming increasingly important in coalition planning. Misunderstandings between coalition partners and incompatibilities in work processes result in inefficiencies in performance of mission activities.

**Customer Specifications:** ONR has challenged us to develop models and algorithms to simulate cultural characteristics in human decision-making. The resulting tool is designed to account for the cultural differences in multinational collaborations leading to improved planning.

**Technology Description:** The Integrated Decision Space is a planning tool based on four component models and an integrating algorithm. The process outcomes are determined by a compatibility test between the organization, process, culture, and decision-maker attributes.

**SPONSORSHIP of original SBIR Topic**

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**TECHNOLOGY DEVELOPMENT MILESTONES (SBIR)**

Milestones	TRL	Risk-Test	Measure of Success	TRL Date
NAVAIR Laboratory Testing	5	Low	Utility Testing	Dec 2006
NPS Military Officer Testing	5	Low	Usability Feedback	Feb 2006
Trident Warrior 2006 Exercise	6/7	Low	Operational Test	June 2006

Open contracts: SBIR Phase II - N00014-04-C-0392 - until July 7, 2006

**TECHNOLOGY TRANSITION OPPORTUNITIES (PHASE III)**

*The company is looking for transition opportunities and program dollars for the following applications and targeted activities:*

>> CFMCC /SOSCOE Cultural Component

>> MPAT Planning Tool

>> CENTRIXS Environment

TRL	Required Test and Demos	Target Date	\$ Needed
8/9	DITSCAP Certification	June 2007	150K

## ***Phase II Summary***



Year II will continue to focus on:

- Incorporating user feedback into improved versions
  - » Increased focus on interoperability,
- Interacting with other CKM researchers
  - » University of Tennessee
  - » E-Wall
- Identifying and capitalizing on transition opportunities
  - » Military exercises,
  - » Specific customers/commands,
- Contributing to the area of multi-cultural issues in collaboration contexts.